

What is claimed is:

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1. An ultraviolet light fluid sterilizing apparatus comprising:  
at least one ultraviolet light source configured to irradiate a fluid with ultraviolet light to sterilize the fluid;  
an ultraviolet light sensitive silicon carbide photodiode, said photodiode capable of generating a signal proportional to the intensity of ultraviolet light detected by said photodiode; and  
a sealed outer housing comprising an optically transparent window, said silicon carbide photodiode located inside said housing and adjacent said transparent window.
  2. An apparatus in accordance with claim 1 further comprising a signal amplification unit coupled to said silicon carbide photodiode.
  3. An apparatus in accordance with claim 2 wherein said signal amplification unit comprises an amplifier mounted on a printed circuit board, said printed circuit board located inside said housing.
  4. An apparatus in accordance with claim 1 wherein said silicon carbide photodiode is sensitive to light having a wavelength ranging from about 200 to about 400 nanometers.
  5. An apparatus in accordance with claim 1 wherein said optically transparent window comprises sapphire or quartz.
  6. An apparatus in accordance with claim 1 wherein said housing further comprises at least one sealable outlet to permit electrical wire connections to pass through said housing.
  7. An ultraviolet light fluid sterilization apparatus comprising:  
a fluid chamber,

at least one ultraviolet light source configured to emit ultraviolet light into said fluid chamber; and

at least one ultraviolet light sensor comprising a silicon carbide photodiode.

8. An apparatus in accordance with claim 7 wherein said ultraviolet light sensor further comprises:

a sealed outer housing comprising an optically transparent window, said silicon carbide photodiode located inside said housing and adjacent said transparent window; and  
a signal amplification unit coupled to said silicon carbide photodiode.

9. An apparatus in accordance with claim 8 wherein said signal amplification unit comprises an amplifier.

10. An apparatus in accordance with claim 9 wherein said amplifier is mounted on a printed circuit board, said printed circuit board located inside said housing.

11. An apparatus in accordance with claim 7 wherein said silicon carbide photodiode is sensitive to light having a wavelength ranging from about 200 to about 400 nanometers.

12. An apparatus in accordance with claim 7 wherein said optically transparent window comprises sapphire or quartz.

13. An apparatus in accordance with claim 7 wherein said housing further comprises at least one sealable outlet to permit electrical wire connections to pass through said housing.

14. An apparatus in accordance with claim 13 further comprising a controller configured to receive, as input, a signal from said ultraviolet light sensor and to output a control signal to said ultraviolet light source to control the intensity of the ultraviolet light emitted from said ultraviolet light source.

15. A method of sterilizing a fluid utilizing an ultraviolet light fluid sterilization apparatus, the sterilization apparatus comprising a fluid chamber, at least one ultraviolet light source, and at least one ultraviolet light sensor, each ultraviolet light source configured to emit ultraviolet light into the fluid chamber, and each ultraviolet light sensor comprising a silicon carbide photodiode, said method comprising the steps of:

flowing a fluid into the chamber of the ultraviolet light sterilization apparatus;  
irradiating the fluid with ultraviolet light from the at least one ultraviolet light source of the sterilization apparatus;

measuring the intensity of the ultraviolet light in the fluid chamber with the ultraviolet light sensor;

sensing an output signal from the ultraviolet light sensor with the controller; and  
adjusting the level of ultraviolet light intensity in the chamber with an output signal from the controller to the light source.

16. A method in accordance with claim 15 wherein each ultraviolet light sensor further comprises:

a sealed outer housing comprising an optically transparent window, the silicon carbide photodiode located inside the housing and adjacent the transparent window; and  
a signal amplification unit.

17. A method in accordance with claim 16 wherein signal amplification unit comprises an amplifier mounted on a printed circuit board, the printed circuit board located inside the housing.

18. A method in accordance with claim 16 wherein the silicon carbide photodiode is sensitive to light having a wavelength ranging from about 200 to about 400 nanometers.

19. A method in accordance with claim 16 wherein the optically transparent window comprises sapphire or quartz.

20. A method in accordance with claim 16 wherein said housing further comprises at least one sealable outlet to permit electrical wire connections to pass through said housing.

21. An apparatus in accordance with claim 1 further comprising a fluid chamber having an interior, said sealed outer housing coupled to said fluid chamber with said transparent window in optical cooperation with said interior of said fluid chamber, and said at least one ultraviolet light source configured to emit ultraviolet light into said fluid chamber.

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